CLAIMS

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1. A composition of a ketone peroxide comprising
   a) a peroxide derivative of the formula
   $HOO-C(R_1)(R_2)-OOH$
   wherein
   R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and
   R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12 carbon atoms; and
   b) a branched or unbranched hydrocarbon solvent;
   the peroxide derivative of a) having a solubility more than 40 g in 100 g of the solvent of b) at 20°C; and
   comprises less than 10 wt.% of a peroxide derivative of the formula
   $HOO-C(R_1)(R_2)-OO-C(R_1)(R_2)-OOH$,
   wherein R_1 and R_2 have the previously given meanings.

2. The composition of claim 1 wherein R_1 and R_2 are alkyl groups.

3. The composition of claim 2 wherein R_1 is a methyl group and R_2 is an isoamyl or amyl group.

4. The composition of any one of claims 1-3 wherein the solvent is a saturated aliphatic hydrocarbon.

5. A composition of a ketone peroxide derived bis-peroxyester, bis-peroxycarbonate, or mixed peroxyester-peroxycarbonate comprising
   a) a ketone peroxide derived bis-peroxyester, bis-peroxycarbonate, or mixed peroxyester-peroxycarbonate derivative of the formula
   $R_3[O]_nC(O)OO-C(R_1)(R_2)-OOC(O)[O]_nR_3$
   wherein
   R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and
   R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12

carbon atoms; and
R_3 is independently selected from a branched or unbranched alkyl group with 1 to 12 carbon atoms, alkenyl group with 2 to 12 carbon atoms; and an aromatic group with 6-12 carbon atoms,
n is independently 0 or 1, and

b) a branched or unbranched hydrocarbon solvent;
and
comprising less than 10 wt.% of a peroxide derivative of the formula
$R_3[O]_nC(O)OO\text{-}C(R_1)(R_2)\text{-}OO\text{-}C(R_1)(R_2)\text{-}OOC(O)[O]_nR_3$,
wherein R_1, R_2, R_3, and n have the previously given meanings.

6. A composition of a ketone peroxide derived monoperoxyester or monoperoxycarbonate comprising

a) a ketone peroxide derived monoperoxyester or monoperoxycarbonate derivative of the formula
$HOO\text{-}C(R_1)(R_2)\text{-}OOC(O)[O]nR_3$
wherein
R_1 is a branched or unbranched alkyl group with 1 to 4 carbon atoms or alkenyl group with 2 to 4 carbon atoms; and
R_2 is a branched or unbranched alkyl or alkenyl group with 5 to 12 carbon atoms; and
R_3 is selected from a branched or unbranched alkyl group with 1 to 12 carbon atoms, alkenyl with 2 to 12 carbon atoms; and an aromatic group with 6-12 carbon atoms;
n is 0 or 1, and

b) a branched or unbranched hydrocarbon solvent;
and
comprising less than 10 wt.% of a peroxide derivative of the formula
$HOO\text{-}C(R_1)(R_2)\text{-}OO\text{-}C(R_1)(R_2)\text{-}OO\ C(O)[O]_nR_3$,
wherein R_1, R_2, R_3, and n have the previously given meanings.

7. A process for the preparation of a composition of any one of the claims 1-4comprising the step wherein a ketone of the formula $O=C(R_1)(R_2)$, wherein R_1 and R_2 have the previously given meanings, is reacted with hydrogen peroxide

in the branched or unbranched hydrocarbon solvent in the presence of an acidic catalyst.

8. Use of the composition of any one of claims 1-6 for polymerizing vinylchloride, (meth)acrylic monomers, styrene, ethylene, or mixtures thereof, for curing unsaturated polyester or vinylester resins, for grafting monomers onto a polymer, for crosslinking a polymer or for degrading a polymer.